

5.5 Select a Mathematical Model

p. 320- 331

Identifying Models using the TI 83- Investigation
or Desmos

p.322

Testing a New Fertilizer

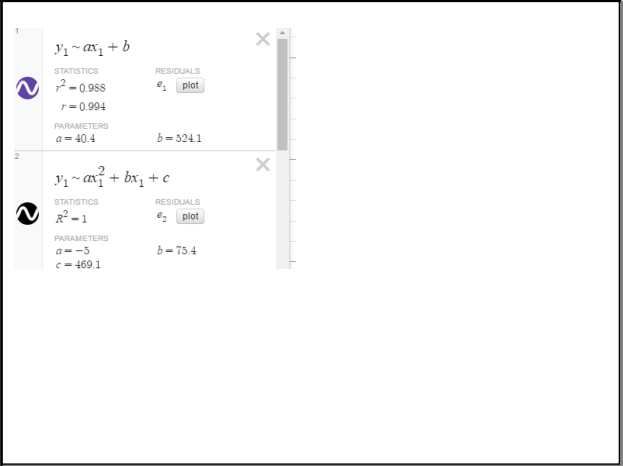
To test a new fertilizer, a biochemical company has planted several test hectares of corn. Individual hectares were sprayed with concentrations of 2%, 3%, 4%, and 5% solutions of the new fertilizer. Crop yields, in bushels per hectare, from each test planting are shown in the table.

Concentration (%)	Yield (bushels/ha)
2	600
3	650
4	691
5	721

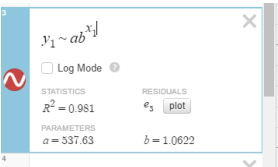


- a) Create a scatter plot of the data.
- b) From your scatter plot, which model appears most appropriate: linear, quadratic, or exponential? Justify your answer.
- c) Generate a model for the data. Represent the model using a graph and an equation.
- d) Use the model to predict the effect of increasing the concentration of fertilizer by several more steps of 1%.
- e) Use your model to predict the concentration that will result in the maximum crop yield.

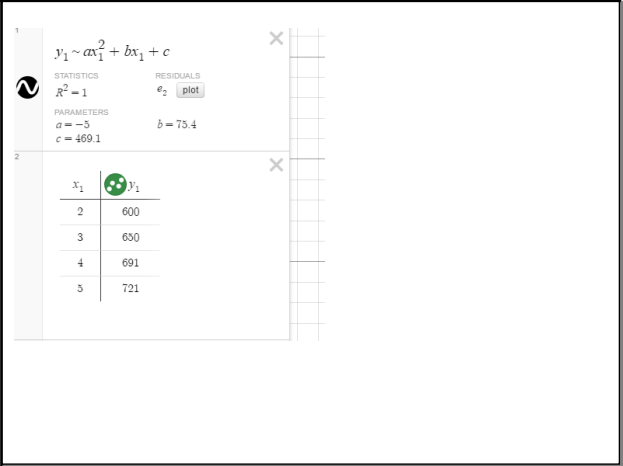
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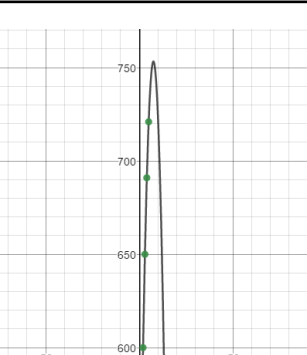
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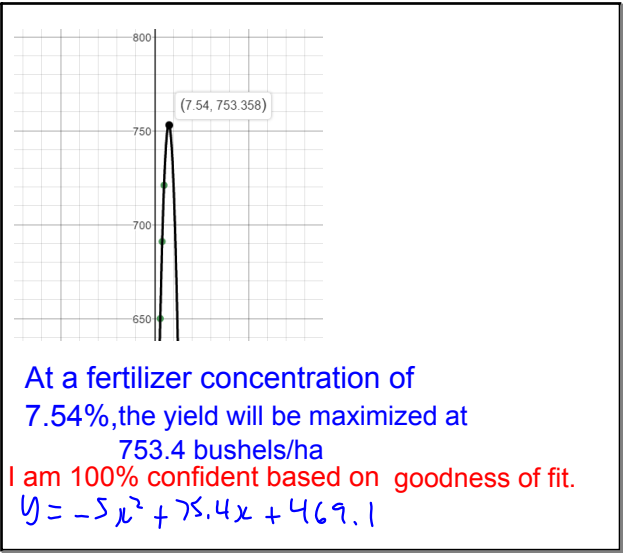
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Apr 10-10:00 AM



Apr 10-10:02 AM

Key Concepts

- Data can be modelled graphically or algebraically
- Models are used to make predictions (interpolations or extrapolations)
- If the first differences are constant, or almost constant then the model is linear
a linear model implies that changes are constant
- If the second differences are the same then the model is quadratic
- If the ratios are the same, the model is exponential - constant percent increase
- If more than one model appears to fit, examine the r^2 value

Hmk. p. 326 -330
q. 3-9 & 10*

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